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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/640,684	08/18/2000	Eiji Ogawa	Q58695	7102

7590 04/09/2003

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EXAMINER
AMINI, JAVID A

ART UNIT	PAPER NUMBER
2672	

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/640,684	OGAWA, EIJI	
	Examiner	Art Unit	
	Javid A Amini	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,8,9,15,16,22 and 23* is/are rejected.

7)☒ Claim(s) *3-7,10-14,17-21 and 24-28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☒ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Amendment

The amendment filed on February 06, 2003 under 37 CFR 1.131 has been considered but is ineffective to overcome the Neitzel and Geddes references.

A) Amendment to the claims:

List of claims

Claim 1 (amended): An image display method, which has an output brightness characteristic in which a logarithmic value of an output brightness becomes smaller as a value of an input image signal becomes larger, for displaying a visible image that said input image signal represents according to said output brightness characteristic, the image display method comprising the step of: setting said output brightness characteristic so that a rate of change, which represents a change in a logarithmic value of said output brightness with respect to a change in said input image signal value, in a low signal value region of said image signal becomes smaller than that in an intermediate and high signal value region of said input image signal.

Claim 15 (Amended): In an image display unit, which comprises a brightness circuit having an output brightness characteristic in which a logarithmic value of an output brightness becomes smaller as a value of an input image signal becomes larger, for displaying a visible image that said input image signal represents according to said output brightness characteristic, the improvement wherein said output brightness characteristic in said brightness circuit is set so that a rate of change, which represents a change in the logarithmic value of said output brightness with respect to a change in said input image signal value, in a low signal value region of said image signal becomes smaller than that in an intermediate and high signal value region of said input image signal.

B) Amendment to the specification:

Page 2, second full paragraph:
On the other hand, the X-ray film, as shown in Fig. 4A, exhibits an output brightness characteristic in which an input image signal S and its output density D are approximately linear, but the sensitivity of the output density D with respect to the input image signal S is reduced at the low signal value region. Also, when viewing an image recorded on X-ray film of such an output brightness characteristic, with the film held to the schaukasten, an image portion of high density is recognized as an image portion of low brightness and an image portion of low density is recognized as an image portion of high density, as shown in Fig. 4B. Therefore, for the image viewed with the X-ray film held to the schaukasten, the sensitivity of the output brightness (logarithmic value) to the value of an input signal becomes lower in the low signal value region corresponding to the image portion of low density than in other intermediate and high signal value regions.

Pages 12-13, paragraph bridging pages:
The output brightness characteristic of the brightness circuit 11 is a characteristic in which the logarithmic value Y (= log (L)) of the output brightness L becomes smaller as the value of the input image signal S becomes larger, as shown Fig. [1]2A. A rate of change |Go_a| (=|ΔY/ΔS|: absolute value of the differentiated value of Y with respect to the differentiated value of S), which represents a change in the logarithmic value Y of the output brightness L with respect to a change in the image signal S, in the low signal value region of the image signal S ($0 \preceq S \preceq S_a$ is set smaller than a rate of change |Go_100| in the intermediate and high signal value region of the image signal ($Sa < S$)(|Go_a| < |Go_100|). Note that the boundary value S_a between the low signal value region and the intermediate and high signal value region is set to a value in the range of the following Eq. 1'. For instance, it is set to $Sa = 0.18 \times S_{max}$ where S_{max} represents the maximum value of the image signal in the output brightness characteristic.

Response to Remarks

On page 4, line 16, regarding the indefiniteness rejection of claims 1 and 15, the amendment is not sufficient to remove the indicated antecedent basis problems! The applicant is claiming [setting a logarithmic value of output brightness with respect to a change in input image signal value, in a low signal value region of said image signal becomes smaller than that in an intermediate and high signal value region of input image signal], and also applicant is providing ranging from 0-100%. In order to be more specific the applicant should provide the real range of input/output signal values (for example: when input value is –10v between 100v, the rate of changes are between 10-60%), which is not specified in specification.

On page 5 and 6, applicant discloses that Neitzel does not disclose the boundary conditions for a low signal value region and an intermediate and high signal value region, contrary Neitzel illustrates in Figs. 2. For example in Fig. 2c, Neitzel illustrates a low signal value region and an intermediate and high signal value region. And also Geddes illustrates the same parameters of conditions (the units are current "A" and time "T"). On the other hand claim 1 does not claim any units for their signals! The office action maintains the same rejection as pervious office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-2, 8-9, 15-16 and 22-23 rejected under 35 U.S.C. 103(a) as being unpatentable over Neitzel et al. US patent 5,550,888 with published date of Aug. 27, 1996, and further in view of L.A. Geddes and L.E. Baker, "principles of applied biomedical instrumentation" third edition, 1989, pp. 453-536.

2. Claim 1.

As per claim 1, "An image display method, which has an output brightness characteristic in which a logarithmic value of an output brightness becomes smaller as a value of an input image signal becomes larger, for displaying a visible image that said input image signal represents according to said output brightness characteristic, the image display method comprising the step of: setting said output brightness characteristic so that a rate of change, which represents a change in a logarithmic value of said output brightness with respect to a change in said input image signal value, in a low signal value region of said image signal becomes smaller than that in an intermediate and high signal value region of said input image signal.", Neitzel et al. hereinafter Neitzel discloses in (col. 5, lines 65-67 and col. 6, lines 1-4) that the individual data words of the data set are corrected and subjected to a logarithmic transformation (block 9), preferably by means of a look-up table, in conformity with the formula $E=\log D/D_0$, where D_0 is a reference does which is derived in known manner from the contents of the image, for example

by histogram analysis. Neitzel dose not explicitly specify the boundary conditions (for low and high value of x and y-axis) or (for a low signal value region and an intermediate and high signal value region of image signal). Geddes teaches in Fig. 2(a-b) page 455 the concept of chronaxie and rheobase, which are, illustrated the boundary conditions for a segment that is linear.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Geddes into Neitzel because Neitzel discloses a method in (col. 10, lines 59-60) that is only essential that the small image structures (low signal value) have a smaller dynamic range than the large image structures (high signal value) and Geddes discloses the concept of rheobase and chronaxie to measure (the x and y axis values) or (a low signal value region and an intermediate and high signal value region of image signal). The transformation functions required for this purpose can always be derived from the preset contrast and density functions. The user can thus directly preset the contrast and density (or brightness) of the image, Neitzel (col. 3, lines 1-6).

3. Claim 2.

As per claim 2, "wherein said output brightness characteristic is approximately linear over approximately the entire intermediate and high signal value region", Neitzel teaches in (col. 8, lines 47-48) that a visible image whose density (brightness) is linearly dependent on the output image values A (high signal value). Neitzel dose not explicitly specify the boundary conditions for low and high value of x and y-axis. Geddes teaches in Fig. 2(a-b) page 455 the concept of chronaxie and rheobase, which are, illustrated the boundary conditions for a segment that is linear.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Geddes into Neitzel because Neitzel discloses a method in (col. 10, lines 59-60) that is only essential that the small image structures (low signal value) have a smaller dynamic range than the large image structures (high signal value) and Geddes discloses the concept of rheobase and chronaxie to measure (the x and y axis values) or (the low signal value region and an intermediate and high signal value region of image signal). The transformation functions required for this purpose can always be derived from the preset contrast and density functions. The user can thus directly preset the contrast and density (or brightness) of the image, Neitzel (col. 3, lines 1-6).

4. Claim 8.

As per claim 8, "wherein said output brightness characteristic is set so that said change rate in the high signal value region of said image signal becomes greater than that in the intermediate signal value region of said image signal", Neitzel teaches in (col. 10, lines 59-60) that is only essential that the small image structures (low signal value) have a smaller dynamic range than the large image structures (high signal value/brightness characteristic).

5. Claim 9.

As per claim 9, "wherein said output brightness characteristic is approximately linear over approximately the entire intermediate signal value region and over approximately the entire high signal value region", see rejection of claim 8.

6. Claim 15.

As per claim 15, "In an image display unit, which comprises a brightness circuit having an output brightness characteristic in which a logarithmic value of an output brightness becomes

smaller as a value of an input image signal becomes larger, for displaying a visible image that said input image signal represents according to said output brightness characteristic, the improvement wherein said output brightness characteristic in said brightness circuit is set so that a rate of change, which represents a change in the logarithmic value of said output brightness with respect to a change in said input image signal value, in a low signal value region of said image signal becomes smaller than that in an intermediate and high signal value region of said input image signal. ", Neitzel et al. hereinafter Neitzel discloses in (col. 5, lines 65-67 and col. 6, lines 1-4) that the individual data words of the data set are corrected and subjected to a logarithmic transformation (block 9), preferably by means of a look-up table, in conformity with the formula $E=\log D/D_0$, where D_0 is a reference dose which is derived in known manner from the contents of the image, for example by histogram analysis. Neitzel dose not explicitly specify the boundary conditions (for low and high value of x and y-axis) or (for a low signal value region and an intermediate and high signal value region of image signal). Geddes teaches in Fig. 2(a-b) page 455 the concept of chronaxie and rheobase, which are, illustrated the boundary conditions for a segment that is linear.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Geddes into Neitzel because Neitzel discloses a method in (col. 10, lines 59-60) that is only essential that the small image structures (low signal value) have a smaller dynamic range than the large image structures (high signal value) and Geddes discloses the concept of rheobase and chronaxie to measure (the low and high value of x and y-axis) or (the low signal value region and an intermediate and high signal value region of image signal). The transformation functions required for this purpose can always be derived from the preset

contrast and density functions. The user can thus directly preset the contrast and density (or brightness) of the image, Neitzel (col. 3, lines 1-6).

7. Claim 16.

As per claim 16, "wherein said output brightness characteristic in said brightness circuit is approximately linear over approximately the entire intermediate and high signal value region", Neitzel teaches in (col. 8, lines 47-48) that a visible image whose density (brightness) is linearly dependent on the output image values A (high signal value). Neitzel dose not explicitly specify the boundary conditions (for low and high value of x and y-axis) or (for a low signal value region and an intermediate and high signal value region of image signal). Geddes teaches in Fig. 2(a-b) page 455 the concept of chronaxie and rheobase, which are, illustrated the boundary conditions for a segment that is linear.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Geddes into Neitzel because Neitzel discloses a method in (col. 10, lines 59-60) that is only essential that the small image structures (low signal value) have a smaller dynamic range than the large image structures (high signal value) and Geddes discloses the concept of rheobase and chronaxie to measure (the low and high value of x and y-axis) or (the low signal value region and an intermediate and high signal value region of image signal). The transformation functions required for this purpose can always be derived from the preset contrast and density functions. The user can thus directly preset the contrast and density (or brightness) of the image, Neitzel (col. 3, lines 1-6).

8. Claim 22.

As per claim 22, "wherein said output brightness characteristic in said brightness circuit is set so that said change rate in the high signal value region of said image signal becomes larger than that in the intermediate signal value region of said image signal", Neitzel teaches in (col. 10, lines 59-60) that is only essential that the small image structures (low signal value) have a smaller dynamic range than the large image structures (high signal value/brightness characteristic).

9. Claim 23.

As per claim 23, "wherein said output brightness characteristic in said brightness circuit is approximately linear over approximately the entire intermediate signal value region and over approximately the entire high signal value region", see rejection of claim 22.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 15 recite the limitation "signal value". There is insufficient antecedent basis for this limitation in the claim. The limitations are not clear because an interval of any signal can be characterized as low signal value/intermediate/high signal value (value can be amplitude, log value, power, and etc.), therefore the low signal value is smaller than the intermediate and high segment of that signal. The inventor should describe and specify the limitations of claims 1 and 15 more clearly.

Allowable Subject Matter

10. Claims 3-7, 10-14, 17-21 and 24-28.

Claims 3-7, 10-14, 17-21 and 24-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Javid A Amini whose telephone number is 703-605-4248. The examiner can normally be reached on 8-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 703-305-4713. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-8705 for regular communications and 703-746-8705 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

Javid A Amini
Examiner
Art Unit 2672

Javid Amini
March 18, 2003

MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
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JB